

control, and monitor the vital systems under normal and emergency conditions, with a minimum of operator confusion and distraction;

(ii) Be on a single deck level; and

(iii) Co-locate control devices and instrumentation to allow visual assessment of system response to control input.

(2) Visual alarms and instruments on the navigating bridge must not interfere with the crew's vision. Dimmers must not eliminate visual indications.

(3) Alarms and instrumentation at the main navigating bridge control location must be limited to those that require the attention or action of the officer on watch, are required by this chapter, or that would result in increased safety.

[CGD 81-030, 53 FR 17838, May 18, 1988, as amended by USCG- 2006-24797, 77 FR 33874, June 7, 2012]

#### § 62.25-25 Programable systems and devices.

(a) Programable control or alarm system logic must not be altered after Design Verification testing without the approval of the cognizant Officer in Charge, Marine Inspection (OCMI). (See subpart 61.40 of this subchapter, Design Verification Tests). Safety control or automatic alarm systems must be provided with means, acceptable to the cognizant OCMI, to make sure set-points remain within the safe operating range of the equipment.

(b) Operating programs for microprocessor-based or computer-based vital control, alarm, and monitoring systems must be stored in non-volatile memory and automatically operate on supply power resumption.

(c) If a microprocessor-based or computer-based system serves both vital and non-vital systems, hardware and software priorities must favor the vital systems.

(d) At least one copy of all required manuals, records, and instructions for automatic or remote control or monitoring systems required to be aboard the vessel must not be stored in electronic or magnetic memory.

[CGD 81-030, 53 FR 17838, May 18, 1988; 53 FR 19090, May 26, 1988]

#### § 62.25-30 Environmental design standards.

(a) All automation must be suitable for the marine environment and must be designed and constructed to operate indefinitely under the following conditions:

(1) Ship motion and vibration described in Table 9 of section 4-9-7 of the ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 62.05-1); note that inclination requirements for fire and flooding safety systems are described in 46 CFR 112.05-5(c).

(2) Ambient air temperatures described in Table 9 of part 4-9-7 of the ABS Steel Vessel Rules.

(3) Electrical voltage and frequency tolerances described in Table 9 of part 4-9-7 of the ABS Steel Vessel Rules.

(4) Relative humidity of 0 to 95% at 45 °C.

(5) Hydraulic and pneumatic pressure variations described in Table 9 of part 4-9-7 of the ABS Steel Vessel Rules.

NOTE: Considerations should include normal dynamic conditions that might exceed these values, such as switching, valve closure, power supply transfer, starting, and shutdown.

(b) Low voltage electronics must be designed with due consideration for static discharge, electromagnetic interference, voltage transients, fungal growth, and contact corrosion.

[CGD 81-030, 53 FR 17838, May 18, 1988, as amended by USCG-2003-16630, 73 FR 65189, Oct. 31, 2008]

### Subpart 62.30—Reliability and Safety Criteria, All Automated Vital Systems

#### § 62.30-1 Failsafe.

(a) The failsafe state must be evaluated for each subsystem, system, or vessel to determine the least critical consequence.

(b) All automatic control, remote control, safety control, and alarm systems must be failsafe.

#### § 62.30-5 Independence.

(a) Single non-concurrent failures in control, alarm, or instrumentation systems, and their logical consequences, must not prevent sustained or restored